

Claims

1. Method for the transmission and reproduction of image data, in which said image data are transmitted from a sending device to at least one communication terminal and reproduced by image reproducing means, 5 the current viewing direction of the communication terminal's user being determined:

wherein first image data are transmitted with a low resolution over a first transmission channel,

10 wherein said current viewing direction is sent over a reverse channel to said sending device,

wherein second image data corresponding to the image areas viewed currently or in future by said at least one user are transmitted with a higher resolution over a second transmission channel,

15 and wherein said first and second image data are superimposed and simultaneously reproduced in said communication terminal.

2. The method of claim 1, wherein said image data are projected by said image reproducing means onto the retina of said user.

3. The method of claim 2, wherein said viewed image area is the 20 image area that is to be projected onto the fovea of said retina.

4. The method of claim 1, wherein the size of said viewed image area can be adjusted.

5. The method of claim 1, wherein the size of said viewed image area can be adapted to the bandwidth of said second transmission channel.

25 6. The method of claim 1, wherein said first image data are transmitted in broadcast mode over said first transmission channel.

7. The method of claim 6, wherein said first image data are transmitted as DVB data.

8. The method of claim 1, wherein said first image data are copied and commercially distributed on magnetic and/or optical data carriers.

9. The method of claim 1, wherein sound data are transmitted over the first transmission channel simultaneously with said first image data and reproduced by said communication terminal.

10. The method of claim 1, wherein said second transmission channel is bi-directional and wherein said reverse channel is the reverse channel of this said bi-directional second transmission channel.

10 11. The method of claim 10, wherein said second transmission channel comprises a publicly connected telephone network.

12. The method of claim 11, wherein said telephone network is a mobile radio network.

15 13. The method of claim 1, wherein said second transmission channel comprises a TCP-IP network.

14. The method of claim 1, wherein user identification data are sent over said reverse channel to a billing center and are used by this billing center for billing the reproduced images.

15 20 15. The method of claim 1, wherein additional multimedia data requested by said at least one user are sent over said second transmission channel.

16. The method of claim 15, wherein said additional multimedia data correspond to a hyperlink selected with the eye in the reproduced image.

25 17. The method of claim 1, wherein said viewing direction is determined in advance.

18. The method of claim 17, wherein said viewing direction is predetermined in consideration of the movement of the viewing point.

19. The method of claim 17, wherein said viewing direction is predetermined in consideration of the movement of the viewed object on
5 said image data.

20. The method of claim 17, wherein said viewing direction is predetermined in consideration of marked areas in the image.

21. Communication terminal that can receive image data and reproduce them with image reproducing means and that can determine
10 the current viewing direction of the communication terminal's user,
wherein

it can receive first image data with a low resolution over a first transmission channel,

15 it can receive second image data corresponding to the image areas viewed currently or in future by the user with a higher resolution over a second transmission channel,

it can send said viewing direction over a reverse channel,
and it can superimpose and simultaneously reproduce said first and second image data.

20 22. The communication terminal of claim 21, wherein said image data are projected by said image reproducing means onto the retina of said user.

23. The communication terminal of claim 22, wherein said image reproducing means are a Virtual Retinal Display that projects image signals
25 corresponding to said image data onto the retina of said user.

24. The communication terminal of claim 21, wherein said image reproducing means are integrated in a different unit from the receiving part of said communication terminal.

25. The communication terminal of claim 24, wherein said units are connected over a contactless interface at close range.

26. The communication terminal of claim 22, wherein said currently viewed image area corresponds to the image area that is to be projected onto the fovea of said retina.

27. The communication terminal of claim 26, wherein the size of said currently viewed image area can be adjusted.

28. The communication terminal of claim 21, wherein it includes a first receiver for image data transmitted in broadcast mode over said first transmission channel.

29. The communication terminal of claim 28, wherein said first receiver is a radio receiver.

30. The communication terminal of claim 29, wherein said first receiver is a DVB radio receiver.

15 31. The communication terminal of claim 28, wherein said first receiver includes a data carrier reader.

32. The communication terminal of one of the claims 21 to 31, wherein it includes a second receiver for image data transmitted over said second transmission channel.

20 33. The communication terminal of claim 32, wherein said second receiver is a transceiver that can send said viewing direction over said reverse channel.

34. The communication terminal of claim 33, wherein said second receiver is a mobile radio terminal.

35. The communication terminal of claim 21, wherein it sends said viewing direction in real-time over said second transmission channel to the sending device.

36. The communication terminal of claim 21, wherein it includes 5 a cache memory for said second image data.

37. The communication terminal of claim 36, wherein said cache 10 memory contains image data that correspond to a larger area than the currently viewed image area and wherein the image data that are extracted from said cache memory depend on the current viewing direction.

38. The communication terminal of claim 36, wherein it further includes a first cache memory for said first image data,

and wherein the data from said first and from said second cache memories are extracted synchronically.

15 39. Sending device, wherein it includes the following components:

a receiver for receiving data comprising the viewing direction of at least one user transmitted over a reverse channel,

20 a first encoding module for compressing first image data with a low resolution and sending them over a first transmission channel in broadcast mode,

25 a second encoding module for compressing second image data, corresponding to image areas viewed currently or in future by said at least one user, with a high resolution and sending them over a second transmission channel.

40. The device of claim 39, wherein said viewed image area is the image area that is to be projected onto the fovea of said retina.

41. The device of claim 40, wherein the size of said viewed image area can be adjusted.

42. The device of claim 41, wherein the size of said viewed image area can be adapted to the bandwidth of said second transmission channel.

43. The device of claim 39, wherein said first image data are transmitted in broadcast mode over said first transmission channel.

5 44. The device of claim 39, wherein sound data are transmitted over said first transmission channel simultaneously with said first image data.

10 45. The device of claim 39, wherein said second transmission channel is bi-directional and wherein said reverse channel is the reverse channel of this second transmission channel.

46. The device of claim 45, wherein said second transmission channel includes a publicly connected telephone network.

47. The device of claim 46, wherein said telephone network is a mobile radio network.

15 48. The device of claim 39, wherein a billing center is provided in order to bill to the user the reproduction of the images.

49. The device of claim 39, wherein it includes a segmentation module in order to determine the image areas that are to be forwarded to said first resp. second encoding module.

20 50. The device of claim 39, wherein said second encoding module encodes all at once image data that correspond to at least one image area viewed simultaneously by a plurality of users currently or in future and sends them to said plurality of users.

25 51. The device of claim 39, wherein said viewing direction is determined in advance.

52. The device of claim 39, wherein said viewing direction is predetermined in consideration of the movement of the viewing point.

53. The device of claims 39, wherein said viewing direction is predetermined in consideration of the movement of the viewed object on
5 said image data.

54. The device of claim 39, wherein said viewing direction is predetermined in consideration of marked areas in the image.

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